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BACKGROUND INFORMATION CONCERNING HEALTH QUESTIONS IN AFTERMATH--ETC(U)
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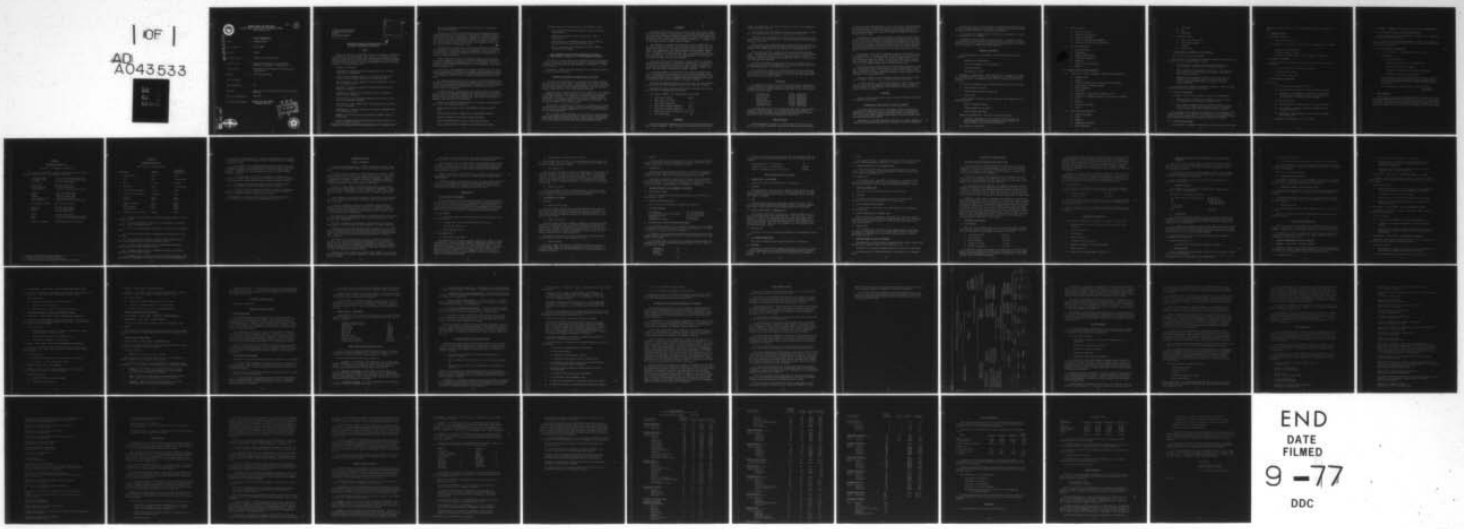

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NATIONAL HEALTH SERVICE
REGION V
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BACKGROUND INFORMATION CONCERNING HEALTH QUESTIONS IN AFTERMATH OF DISASTERS

REPORT

Floods and, above all, earthquakes insofar as our country is concerned, are included in the term disaster, that is to say a situation occurring involving a specific part of the country wherein material destruction and damage threaten the life and health of the population as a result confronting public authority with the overriding requirement to take action using resources at an extraordinary rate.

Indeed, this involves:

A phenomenon occurring suddenly and unpredictable in occurrence, opportunity and magnitude.

Cause of serious damage especially of the material type and requiring quick and urgent solutions for dealing with them.

Deep repercussion on the community and with considerable dislocation of public services.

Appearance of multiple, complex and diverse problems which are difficult to handle.

Exceeding the capabilities of normal resources of the Health Service and the community.

Deterioration of the established administrative structure creating severe additional problems.

Difficulties of quick communication and incomplete data available in the first moments.

Nonexistence of crews and reserves for resulting responsibilities on an exceptional scope.

Numbness of the population upon suffering the immense "shock" of the disaster.

Lack of coordination between institutions and public services involved in plans of action.

*Numbers in the right margin indicate pagination in the original text.

Initial disagreement on placing in execution specific operations and approved programs.

Factors such as these, briefly explained, work together against the prompt implementation of assistance to the population, keeping in mind, nevertheless, that public institutions organized for emergency activities such as the armed forces, gendarmerie, emergency services of hospitals and a number of public utility services such as the Company for Electricity and Telephones receive the first impact and overcome critical volatile situations with extraordinary vigor.

The resources for coping with a disaster are improvised, heterogeneous, disorganized and complex at the very beginning. They are essentially for the purpose of placing in operation the emergency plan worked out by the Civil Protection Services adapting it to the local, provincial or regional contingent situation.

Indeed, immediately after the earthquake of March 1965, Law 16.282 /2
was passed containing provisions for cases of earthquake or disasters and setting up standards for reconstruction of the area affected. This was modified by Laws 16.289-17073 and by DFL No. 1 of the Ministery of Interior dated 22 February 1971.

Article 19 of the abovementioned law makes the armed forces and gendarmerie responsible for working out an organic plan for emergencies caused by earthquakes or disasters and for coordinating human and material resources of the public services as well as public and private welfare institutions.

In compliance with such an article, there is a national emergency plan approved by the Supervising Council for National Security and additionally provincial plans intended for organizing, coordinating, specifying and ordering the means required to reestablish normal conditions at the place or region affected by a disaster.

All public services and institutions collaborating should be combined into the Provincial Emergency Committee whose senior leader is the direct manager assisted by the Chief of Operations. This Emergency Provincial Committee plans, coordinates and mobilizes all resources for coping with all immediate problems caused by the disaster.

Insofar as the National Health Service is concerned, its responsibilities in the first instance would be to:

Verify the repercussion on its establishments caused by the disaster,

Have available means for taking care of hospitalized patients,

Reinforce emergency services with special personnel,

Collect needed therapeutic stores, centralizing reserves,

Await intensification of emergency cases from multiple causes,

Forwarding seriously injured patients to specialized centers

Forming professional working groups in order to cope with joint problems

Organization of medical rounds in districts, towns or isolated sectors

Establishment of a coordinating system for receiving and giving out information between welfare centers

Name one delegate to the emergency provincial committee chaired by the intendant.

BASIC INFORMATION FOR PLANNING ACTIONS BY THE NATIONAL HEALTH SERVICE -- REGION V -- IN THE AFTERMATH OF DISASTERS

The analysis has been centered in Valparaiso, Vina and neighboring localities since they form the largest center of population and because the general conditions reported are applicable, by extension, to cities of the interior.

Furthermore, chapters have been prepared for a contingent situation pointing out actions concerned.

GEOGRAPHICAL LOCATION, VALPARAISO AND VINA DEL MAR /3

Valparaiso and Vina del Mar are two adjacent urban nuclei together forming a cluster of urban centers. Even though it is certain that they have different functions forming a community with other nearby population centers such as Quilpue, Villa Alemana and Quintero, they are the basic nucleus of what has come to be called Greater Valparaiso.

Administratively, Valparaiso and Vina del Mar have their own community or municipal territories and Valparaiso is, furthermore, head of the so-called region territory. For purposes of national planning, ODEPLAN, the provinces of Valparaiso and Aconcagua have been joined togehter to form the so-called National Region V. This Region V encompasses in its totality the Valley of the Aconcagua River.

The province of Valparaiso is located at 33° latitude and 72° longitude west and the cluster of urban centers represented by Valparaiso and Vina del Mar is located approximately at 33° 01' of latitude south and 71° 37' of longitude west.

This situation locates Valparaiso and Vina del Mar in the political, social and economic gravitational center of the country. The so-called Central Chile area and, within this, the transverse Valparaiso-Santiago axis form the greatest and most important urban grouping of Chile.

CLIMATOLOGY

Valparaiso-Vina del Mar are close to the northern limit of the climatological area defined as "temperate warm climate with prolonged dry season". This situation involving pluviometric periods of extreme dryness causes in the region climatic conditions which are identified with those farther north and defined as "a steppe climate with abundant cloudiness". In summary, it can be classified as a temperate semiarid climate.

Even though it is certain that Valparaiso and Vina del Mar share in the general climatic conditions of their region, there is emphasis on the special influence of the ocean owing to their coastal location. This influence is considerable in its moderating effect on the average temperatures causing them to fluctuate no more than 7° C throughout the entire year. In summary, it can be stated that the temperature condition is similar during the year, 17°, 18° C in the summertime and 11°, 12° C in the wintertime and stable during various periods.

The same is not true for the system of rainfall which is consistent during the year with rather long periods of instability. The rainfall is concentrated in the months of winter, May, June and August; and there is practically no rainfall in the period of summer, December, February and March. The mean annual precipitation amounts to 460 mm.

The relative humidity of the winds is also heavily affected by the ocean. With respect to the winds, it could be stated that those coming from the north during the wintertime are associated with the rainfall and the prevailing winds from the southwest blow from springtime in the month of September until the end of summer in the month of March.

The prevailing winds during most of the year come from the southwest. In wintertime, the prevailing winds come from the north and northwest.

Dense natural fogs frequently develop and are preferentially located /4
over the Port of Valparaiso and Vina del Mar.

As a general summary, the following data are provided:

a.	Mean annual rainfall	460 mm
b.	Mean annual dry months	7
c.	Mean annual temperature	14° C
d.	Mean annual maximum temperature	19° C
e.	Mean annual minimum temperature	10° C
f.	Mean annual relative humidity (18 hs)	75%
g.	Prevailing winds	SW

TOPOGRAPHY

The area occupied by Valparaiso and Vina del Mar is characterized by a quite varied topography. There are urban areas occupying the bottom and

slopes of a narrow pass, the ridge or plateau of a hill or the relatively scarce flat part of a city.

Nevertheless, both in Valparaiso as well as in Vino del Mar, this divsity can be grouped into two sectors, "the flat" and "the hills".

"The flat" part of Valparaiso is constructed on an old beach covered with artificial fill and extends up to the narrow passes and terraced slopes making up "the hills".

Vina del Mar, on the other hand, was constructed for its flat part on pluvial marine sediments forming the deposit of Estero-Marga-Marga and also extends to the narrow passes and terraced slopes forming "the hills".

The natural vegetation is made up mainly of spiny bushes and small trees. On some slopes, this vegetation is so thick that it becomes impenetrable. In general, the part with flat topography has much less dense vegetation contrasting with the narrow passes and valleys in which an abundant vegetation has developed.

The urban development of Valparaiso has been a continuous process of ascending occupation of surrounding hills, the outlying towns reaching today the 300 meter mark or more above sea level.

Vina del Mar has a surface or "layout" which is more extensive than Valparaiso and is now totally occupied. The ascent up to the surrounding hills is more recent. Nevertheless, levels of more than 200 meters above sea level have been already reached.

POPULATION

The population of Region V on 30 June 1976 according to information from the regional statistical section of the National Health Service gives a general total of 1,146,110 inhabitants distributed in the following manner by public health areas:

Los Andes area	59,734	inhabitants
San Felipe area	98,356	inhabitants
Quillota area	176,026	inhabitants
Quilpue area	158,740	inhabitants
Vina del Mar area	273,226	inhabitants
Valparaiso area	284,936	inhabitants
San Antonio area	95,902	inhabitants

It is advisable to note that the bedroom satellites in the vicinity of /5
Valparaiso and Vina del Mar, i.e., Quilpue, Limache, Villa Alemana, etc., contribute a good percentage of the floating population which sleeps in those places only to work in Valparaiso and Vina del Mar.

VITAL STATISTICS

The biodemographic statistics in Public Health Zone IV for the year 1975 for the areas of Valparaiso, Vina del Mar, Quilpue and Quillota show

an average rate per 1000 inhabitants of 21.7 births and 7.4 general mortality with the infant mortality (less than one year of age) amounting to 46.5. These figures provide a birth rate slightly less compared with the last three years and an infantile death rate slightly less than the average of the two previous years.

The morbidity rate by diseases of hydric origin or by characteristics in areas with serious problems of environmental contamination show normal values in the area of Valparaiso and Vina del Mar compared with the prevailing ones in the country. This is explained by the high slope in the populated areas of the hills where basic health services are lacking and owing to the better standard of living in the low areas of the plain near the sea which probably receive the results of the lack of services in the high part.

Unfortunately, there are not available sick rates calculated for the populated districts of Valparaiso and Vina del Mar but only average figures for communes. It is to be assumed that in the populated districts the rates are greater than the average. At any rate, typhoid has an average rate per 100,000 inhabitants of 38.1, salmonellosis 2.5, infectious hepatitis 102.8, intestinal laparasitosis 29.8 and amebiasis 8.8.

The previous figures shown do not represent either epidemics nor alarming figures for any one of these diseases of the so-called hydric origin type. Nevertheless, there is encountered a higher rate of parasitosis in Valparaiso than in the three remaining communes, certainly owing to a lower standard of living and sanitation.

Insofar as typhoid fever is concerned, Quillota gives a much greater rate, certainly a result of basic existing sanitation conditions.

It is then possible to conclude that diseases of hydric origin can be greatly reduced and in a number of cases eliminated if basic sanitation services (water and sewage system) were extended into areas presently inhabited but with no services.

NUTRITION

Given its relevant importance on the occasion of disasters, this chapter emphasizes this aspect.

IMPORTANCE OF FOOD SUPPLIES IN CASE OF DISASTERS

The abrupt interruption of the food supply routine increases in a population the anxiety and sense of insecurity caused by the earthquake and brings to the surface antisocial attitudes both on an individual as well as collective basis creating problems which can be more serious than the physical devastation itself.

Furthermore, a terrified and hungry population has neither interest nor capability for organized work which is so necessary in times of emergency. /6

Finally, with total or partial hunger, the immunizing defenses decrease and the condemned population is exposed to contagious diseases which acquire an epidemic character further complicating the situation.

It is at this time during disasters that the major importance is shown of food supplies for a community.

Individual and social unrest can turn to panic. A reduction of will and capability for work as well as decrease in organic defenses encouraging epidemics give rise to situations which should be prevented by actions ensuring food supplies for populations during disasters.

EMERGENCY FOOD SUPPLY

In the organization of food supply, the following factors should be considered:

Timetable of opportunities,

Size and distribution of the population,

Available supplies,

Distribution of foods.

Timetable of opportunities. This includes, for one thing, the period of time during the first hours of the calamity and, for another thing, during the first days of the emergency and, thirdly, when the recovery stage has begun.

The size of the population and its distribution will take into account:

1. Small population centers,
2. Medium-sized population centers, and
3. Large cities.

It will likewise be useful to know the status of the components of the female population:

Number of nursing mothers,

Pregnant women and wet nurses,

Older children and adults.

Supply of available food. For this, there should be made:

A census of food present in the locality either in small centers of population or in the geographical area (district) in medium-sized or large centers of population.

This census will be made by:

A. Public Services

a. Stores of the ECA
b. Stores of the districts
c. Stores of hospitals
d. Stores of boarding establishments
e. Stores of other public establishments.

B. Private Organizations

a. Wholesale stores
b. Supermarkets
c. Markets and warehouses
d. Hotels and restaurants
e. Bakeries
f. Small shops and pharmacies
g. Others.

2.3.2 Classification of These Foodstuffs

A. Foodstuffs for Direct Consumption without Prior Preparation

a. Powdered milk
b. Cheeses
c. Other concentrated milks (evaporated and condensed)
d. Special milk for nursing mothers
e. Dried vegetables
f. Cured meat
g. Preserves of animal origin, especially fish
h. Preserves of vegetable origin, fruit and green vegetables
i. Bread
j. Biscuits
k. Chocolates and candy
l. Fruits

B. Foods Requiring Preparation

a. Cereals and doughs
b. Flour
c. Potatoes
d. Leguminous vegetables
e. Early vegetables

f. Dry fruits

g. Eggs

h. Dried fish.

C. "Potential" Foods

a. Cattle for milk and meat

b. Other edible animals

c. Orchards

d. Sowed fields.

2.4.1 Distribution of Foodstuffs to the Population

In the first hours (24 to 48 hours).

The food will be distributed for immediate consumption consistent with availabilities, age and physiological state.

a. Nursing mothers: Adequate food provided at hospital centers or medical stations under strict medical control.

b. Older children, pregnant women and wet nurses: They will be given preference in distribution of evaporated and condensed milk, cheese and oranges.

c. Remainder of the population in which the previous group is included, bread, biscuits, sugar, chocolate, brown flour, butter, fruits and 100 milligrams of abscorbic acid per person (Vitamin C).

In accordance with subsistence guidelines, Appendix 1, which provides for about 1900 calories and 60 g of proteins.

2.4.2 In the Following Days

Following a census of the population, there will be distributed:

a. Nursing mothers: Adequate food in hospital centers or medical stations in the form set up in Section 2.4.1.

b. Older children, pregnant women, wet nurses and adults: Emergency rations according to the program contained in Appendix 2 which provides about 2000 calories and 60 g of proteins. /8

This emergency ration (ER) can be distributed in a preprepared form in community kitchens or, if advisable and allowed under the circumstances, in the form of an uncooked ration. In this last case, distribution of fuel must be awaited and there must be present facilities for cooking.

2.4.3 In the Recovery Stage

Continue with the community kitchens and continue organizing the normal

marketing of foods, making use of the ration card based on the emergency ration.

3. COURSES OF ACTION

3.1 PROCURING FOODSTUFFS

a. During the first hours.

On the basis of the census of foods (2.3.1), foodstuffs may be obtained by:

Donations, against receipt,

Purchases, against receipt,

Requisition, against receipt and by responsible authority.

3.2 STORAGE OF FOODSTUFFS

There will be set up consistent with circumstances and size of the afflicted area:

a. One grocery store or central grocery stores,

b. Outlying grocery stores,

c. At the normal supply point.

3.3 DISTRIBUTION OF FOODSTUFFS

3.3.1 Local

a. In the first hours consistent with 2.3.1:

aa. Nursing mothers at hospital centers or medical stations

ab. Remainder of the population, distribution of foodstuffs for immediate consumption at centers strategically located in order to avoid crowds and confusion.

b. In the first few days:

ba. Nursing mothers, at hospital centers or medical stations

bb. Sick persons or accident victims, at hospital centers or medical stations

bc. Remainder of the population as set up in 2.4.2 (subsistence ration, SR).

c. During the following days, as in 2.4.3 (ER).

3.4 PERSONNEL. SUBORDINATE TO THE OFFICE OF THE LOCAL GOVERNMENT CHIEF

3.4.1 For Purposes of Census and Obtaining Foodstuffs

Authorized personnel who are responsible and identifiable: Members of the armed forces and civil defense.

3.4.2 For storage activity, the same personnel, aiding to the latter personnel belonging to the ECA and other services of the State which have grocery stores or restaurants.

3.4.3 For Distribution of Foodstuffs /9

a. In the first hours: armed forces and civil defense

b. Subsequently:

ba. Community kitchens:

Personnel from kitchens of the armed forces,

Personnel from hospital kitchens,

Personnel from kitchens of homes and institutions,

Personnel from hotels and restaurants.

All of the above under the administrative and fiscal direction of the armed forces and Technical Directorate of Nutrition experts of the National Health Service (SNS), SERMENA and other institutions.

bb. Distribution of uncooked rations (ER): Red Cross
Civil Defense
and others

4. FINAL PROPOSALS

Program "models for emergency responsibilities" for populations having more than 20,000 inhabitants or "sectors" of the same size in larger populations and on the basis of these distribute the functions and responsibilities of the institutions and persons such that, when the disaster occurs, each entity assumes its role directly in a responsible and efficient manner.

APPENDIX 1

SUBSISTENCE RATION (SR)

(Foodstuffs for Immediate Consumption)

The subsistence ration (SR) considers foodstuffs in groups capable of being substituted for each other within any one group.

1.	Evaporated milk*	1 can for every two persons daily
	Condensed milk**	1 can for every three persons daily
	Or cheese	30 g per person daily
2.	Cured meats	20 g per person daily
	Dried vegetables	20 g per person daily
	Fish preserves	1 can for every three persons daily
3.	Oranges	1 unit per person daily
	Apples	1 unit per person daily
	Bananas	1 unit per person daily
	Other seasonal fruit	1 unit per person daily
	Fruit preserves	1 can for every three persons daily
4.	Bread and/or biscuits	400 g per person daily
5.	Chocolate	20 g per person daily
	Candies	20 g per person daily
	Sugar	50 g per person daily
6.	Butter	10 g per person daily
	Jam	1 jar for every three persons daily
	Honey	1 jar for every three persons daily
7.	Vitamin C, tablets	100 milligrams per person daily

* Pregnant women, wet nurses and children.

** Preschool and school children preferentially.

N.B. Pregnant women and wet nurses given preference in general.

APPENDIX 2

EMERGENCY RATION (ER)

(2000 calories - 60 g proteins)

Foodstuffs	Quantity	Frequency of Consumption
1. Powdered milk	50 g	Daily
2. Meat	100 g	4 times weekly
3. Eggs	3 units	Per week
4. Vegetables	60 g	5 times weekly
5. Citrus fruits (oranges)	1 unit	Daily
6. Other fruits and greens	2 portions	Daily
7. Potatoes	200 g	Daily
Bread	400 g	Daily
8. Cereals and pastas	50 g	Daily
Sugar	40 g	Daily
Oil and butter	30 g	Daily
Tea and coffee	10 g	Daily
9. Vitamin C in tablet form	100 mg	Daily

1a. Preference should be given to pregnant women and children for consumption of milk.

1b. Instructions should be given for the reconstitution of powdered milk at a family and community level.

1c. The 20 g are approximately equivalent to one-half liter recombined milk.

1d. The ration of milk should be supplemented or substituted by 20 g of cheese.

1e. The possibility is suggested of using canned condensed milk in 400 g cans reconstituted with an equal quantity of water.

2a. Any type of meat available will be considered including beef, lamb, pork, fowl and fresh and/or dried fish.

2b. If meat is used for stew or otherwise with bones, the portion would have to be increased to 160 g.

3. Depending on the facilities for preparation and consumption, three eggs weekly is recommended, a quantity which can be increased depending on

the availability and capabilities for supply and distribution, particularly if difficulties would occur in supply of meat. Preference given to pregnant women and wet nurses.

4. With respect to the material problems related to preparation and consumption of greens, it is recommended to include one orange or one tomato per person depending on the season in order to ensure the daily supply of Vitamin C. Preference given to pregnant women, wet nurses and preschool and school children.

5. In order to make up for lack of consumption of greens, other fruits will be added such as apples or fruits in season as well as a number of greens which are easily processed such as carrots, squash and onions.

6. The quantity indicated corresponds to three regular potatoes. If it is not possible to cook them in water, they can be fried.

7. The use of roast flour with boiling water or milk is recommended because no preparation problem occurs. It is also possible to utilize noodles or spaghetti which are easy and quick to cook.

Depending on local material facilities for preparation and supply, other foodstuffs in this group can be considered such as rice.

CUSTOMS AND RELIGION /11

SPECIAL INTERESTS

The population is homogeneous, exclusively white, with a high degree of literacy and predominantly urban, forming well-defined residential centers.

Its social economic condition is heterogeneous with a number of populated centers having a "satisfactory status" and others with a low one but without going so far as to be called "mushroom populations". There is a considerable governmental stimulus for grouping in community settlements provided with all services. There are also some isolated initiatives for building independently and without technical assistance.

There are a large number of communities which show a great capacity for organization forming themselves into committees of neighbors -- recognition and legal encouragement -- centers for mothers, sport clubs, mutual benefit societies -- the oldest in the country -- consumer cooperatives, etc.

These community organizations collaborate efficiently with the authorities on the occasion of disasters showing high degrees of solidarity and public good will.

It is also worthwhile to point out, furthermore, the existence of institutions with specified structure such as the firefighters, rescue squads, Red Cross, Civil Defense, Boy Scouts, etc. to whom as a body specific tasks may be allotted which can be accomplished with exceeding efficiency and exceptional responsibility.

The population is predominantly Catholic although there are large groups of protestants and evangelical groups with a smaller proportion of Jews, orthodox cults and Mormons.

Religious ceremonies are celebrated in churches with great tolerance being shown for cults and with the complete absence of religious quarrels.

Channeled through the churches and religious groups there is a considerable international cooperation involving such as Caritas, evangelical assistance, Lutheran church, etc. who generously provide foodstuffs and equipment. This assistance has been increased during previous occasions of public calamity.

The habits of this population do not differ especially from those of the rest of the country even though the topography of its city differs greatly and its condition as maritime port emphasizes a number of factors. Indeed, the majority of the inhabitants (about 85%) live on hills, lacking easy accessibility, with precarious sanitary conditions, with difficulties of supply and remoteness from work centers.

A number of clinical studies have implied that a number of such factors would be favorable to a greater incidence of cardiovascular diseases as well as strain hernias.

The condition as a maritime port, with periodic influx of foreign elements, requires a vigilant concern for detecting venereal diseases.

One associated factor is represented by alcoholism which may be found connected to fatal traffic accidents, police arrests and amounting to 10% of cases of emergency services, 20% of male hospitalizations (preferentially cirrhosis of the liver and cardiovascular diseases) and admissions into psychiatric services.

There are specialized services for their treatment and there has been encouragement for creation of alcoholic treatment centers enabling their rehabilitation. /12

Within the region, an agricultural area par excellence, with extensive crops of fruit and hemp, there has occasionally been discovered illicit production and transport of "cannabis" for distribution to drug addicts. Nevertheless, the authorities continuously seek its control.

POTABLE WATER

1. WATER SOURCES AND PROCESSING

The sources which are used for supplying water to Valparaiso and Vina del Mar are various owing to the fact that they have been used successively in the course of time with varying requirements. It is not possible to state that this has been done systematically or programmatically, but each extension has involved an economic factor in utilizing what is available. These sources are of different types and supply quite separate sectors.

1.1 MAIN SOURCES

a. Underground nappe of the Aconcagua River in Las Vegas near Llay-Llay (2240 l/sec.)

b. Aconcagua River near its mouth in Concon (750 l/sec.)

c. Penuelas Dam (400 l/sec.)

d. Other emergency sources.

1.2 PROCESSING TYPES

a. Harnessing the Las Vegas

Represented by an underground catchment approximately 1800 m in length supplemented by a surface catchment which is prefiltered through slow natural filters located at 80 km from the City of Valparaiso and 1 km to the northeast of the tunnel of Calavera on the Pan American highway. From Las Vegas, it is presently possible to obtain a flow rate of 2240 lt/sec. in gravitational form of which 17.8% is consumed in other cities close by before arriving at Valparaiso and Vina del Mar. The cities supplied are: Limache, Villa Alemana and Quilpue.

b. Harnessing the Aconcagua River at Concon

This is made up by a direct tap of the Aconcagua River at about 4 km before its mouth. Its total capacity is 750 lt/sec. with the waters being treated in a high-speed filter plant.

c. The Penuelas Dam

This involves a dam with a capacity of approximately 95,262 million m^3, exclusively supplied by rainfall falling in a hydrographic valley having 9,095 ha located at altitude 340 m above sea level. It is 16 km distant from the city and is the only source with capabilities for gravitational supply to the highest locations in the port. The capacity of this source is 375 l/sec. with the waters being treated in a slow as well as high-speed filter plant.

d. Emergency Sources

There are a number of wells in Valparaiso which can only be used in cases of emergency and which are located in the following places: Parque Italia, Bellavista, Avenida Argentina and Plaza Echaurren. /13

2. DISTRIBUTION OF SYSTEMS

2.1 SUPPLIES

a. Supply from Las Vegas

The water coming from Las Vegas is passed through a supply route 84 km long to the storage reservoir "Jorge Lyon" located at an altitude of 172 m above sea level at the upper part of the Baron hill and then to the Santa Ines reservoir intended for consumers in the high districts to the north of Vina del Mar.

b. Supply from Concon

The water coming from this catchment is pumped to Valparaiso and Vina del Mar by lifting plants and are received in Valparaiso in the San Guillermo reservoir (altitude 72 m above sea level) and at Vina del Mar in the Coraceros reservoir (altitude 54 m above sea level). The Concon plant supplies the sea resort of Concon, Vina del Mar and some sectors of Valparaiso supplementing Las Vegas and Penuelas.

This supply provides the following flow rates: San Guillermo reservoir 500 l/sec. and the Coraceros reservoir 250 l/sec.

c. Penuelas Supply

The water coming from Penuelas is supplied to Valparaiso by means of a gravitational supply 19.5 km long leading to the El Vigia reservoir located at 205 m above sea level which supplies in turn the Rodriguez and Vizcachas reservoirs.

2.2 STORAGE

At the present time, the potable water service of the Valparaiso-Vina del Mar urban center cluster has available 17 storage reservoirs at different altitudes with a total of 85,000 m^3 capacity.

2.3 CHLORINATION

Consistent with legal provisions in force, all water for consumption is disinfected by adding chlorine and treating it in order to maintain a minimum of residual chlorine in the network amounting to 0.1 ppm.

Chlorination is generally used in the "El Vigia" and "San Guillermo" reservoirs whereas there is postchlorination in the treatment plants of Concon and Penuelas. At Las Vegas, a chlorination is carried out at Pachacana which is later rechlorinated in the distribution reservoirs.

3. MEASURES REQUIRED IN THE AFTERMATH OF DISASTERS

3.1 EVALUATION OF DAMAGE

Review of background and possible deteriorations in the supplies and distribution of water.

3.2 LISTING OF WHAT CAN BE USED

This is done by characteristics (quantity and quality).

3.3 PERSONNEL REQUIRED

/14

For hospitals	40 to 60 1/pers/day
For provisional shelters and camps	15 to 20 1/pers/day
Community canteens	20 to 30 1/pers/day
Evacuations	4 1/pers/day
Population in general	50 1/pers/day

3.4 DISTRIBUTION OF WATER AND SANITATION MEASURES

As a preventive measure, it is occasionally necessary to seal a number of regulatory reservoirs in order to be able to provide water to the water tank trucks as occurred in the last earthquake.

At that time, there were 60 trucks which proved insufficient for supplying Valparaiso and Vina del Mar, cities affected in various sectors with losses of water supply.

At the present time, the Directorate of Regional Sanitation Works has available only 10 tank trucks with an average capacity of 7 m^3. They are distributed as follows:

Valparaiso	4
Vina del Mar	4
Quilpue	1
San Felipe	1

As can be seen above, and in accordance with investigations made, the requirements for every 10,000 inhabitants in the case of disasters are as follows:

Tank trucks with a 7 m^3 capacity	10
Cisterns with 0.2 to 10 m^3 capacity	100-200
Tablets for applying chlorine and iodine	100,000

FINAL DISPOSITION OF SOLID WASTES

1. GARBAGE DUMP: LOS PLACERES

This site is used by the municipality of Valparaiso.

1.1 LOCATION

This garbage dump is located in the commune of Vina del Mar in a deep ravine situated 100 m to the southeast of the interconnection of the Agua Santa bypass with Avenida Matta. There are no problems from the viewpoint of proximity of housing.

1.2 SIZE

The surface used includes access roads, parking for trucks, control house and the garbage dump itself amounting to about 3.2 hectares approximately with a daily volume of wastes handled amounting to 703 m^3/day.

1.3 GENERAL DESCRIPTION OF TECHNIQUES USED

This garbage dump uses the technique of a controlled dump in that it daily accepts wastes and covers them with dirt. The work starts from the high point of the ravine which means that the wastes do not remain well covered. In general, no national work plan has been established since it is not known what the final altitude reached will be, thus ultimately determining the filling. There are a great number of private garbage collectors with and without control.

1.4 SERVICE LIFE /15

The service life of this terrain is estimated to be approximately seven years.

2. EL COLORADO GARBAGE DUMP

This site is presently used by the municipality of Valparaiso.

2.1 LOCATION

This dump is located in the commune of Valparaiso 12 km from the center of the city approached by the road to Quebrada Verde along the La Polvora road (at 1 km). There are no problems from the viewpoint of proximity of housing.

2.2 SIZE

The available surface is approximately 8 hectares with a daily volume of wastes handled amounting to 200 m^3 per day when it is in operation.

2.3 GENERAL DESCRIPTION OF THE TECHNIQUE USED

In this dump, work proceeds using platforms (mesetas) at different levels. Once a platform is completed, another platform is used which has a level lower by approximately 2 m.

2.4 SERVICE LIFE

At the present time, about 30% of the capacity of the dump has been used and, considering the possibility of using nearby ravines, it is believed that the service life of the sector as dump goes beyond 15 years.

3. LAJARILLA GARBAGE DUMP

This site is used by the municipality of Vina del Mar.

3.1 LOCATION

This dump is located to the north of the city of Vina del Mar on the road to Concon and at 13 km from the city of Vina del Mar.

3.2 DAILY VOLUME OF WASTES HANDLED

A daily volume is received in this dump amounting to approximately 670 m^3 of wastes.

3.3 GENERAL DESCRIPTION OF TECHNIQUE USED

This site uses the technique of controlled dump. There is a lack of continuity in the work and in machinery available so that on many occasions there can be seen a great quantity of garbage on the surface with occasional burning points.

3.4 SERVICE LIFE

It is estimated that the service life of this property can be about 20 years if 174 hectares are to be considered which could be provided the municipality by the ENAP for its use on the condition that it operates with a sanitary fill.

4. MEASURES NEEDED IN CASE OF DISASTERS

Distribution of suitable cisterns (transferred from industry which could provide them to shelters, camps, field hospitals, etc.).

Planning for recollection systems (especially at places most affected).

Locating places for final disposition of solid wastes on an emergency basis.

DESCRIPTION OF SEWER SYSTEMS

1. THE SEWER SYSTEM OF VALPARAISO AND VINA DEL MAR

The first works in Valparaiso started basically with a collecting trench which crossed the plain longitudinally collecting the used waters flowing out of the service networks finally arriving at a lifting plant located in Calle Blanco at the corner of Valdivia where it was delivered to the ocean (opposite Caleta Membrillo).

Vina del Mar was the construction site for the lifting plat at Uno Norte, corner of 4 Poniente. The used waters arrive through a cast iron piping with a 300 mm diameter and cross under the bed of the Estero coming finally out through the drain of Calle 4 Poniente. /16

At the present time in Valparaiso, the network of pipelines has been extended and there have been installed new household connections involving a distance of 502,000 m with 28,500 connections. Mention should also be made of the extension of the lift plant and construction of tunnels in the rock which are 160 and 320 m in length. The latter are used to extend the existing drain to Falucho located in the extreme eastern part of Playa Ancha.

Meanwhile, in Vina del Mar, there have been carried out a great many works among which these could be mentioned: a second drain 1900 m in length and 1.0 m in diameter, collector 1 north which is 4200 m in length and 450 to 600 mm in diameter, the intersections below Estero located at the streets Libertad and Cancha which are 400 mm in diameter made of steel and 450 mm in diameter respectively. The collector of Calle Villanelo which is 600 mm was built to serve the center sector of the city. Finally, the construction of two underwater discharge networks made of steel and 400 mm in diameter and 200 m in length in 19 Norte (to the north of the city). The network has been extended through the city reaching a total of 580,490 m of network pipelines connecting to 34,200 homes.

2. DISCHARGES INTO THE SEA

2.1 IN VALPARAISO

There are five discharges into the sea, all of which empty the waste water directly without any treatment. The location of present discharges are as follows (with the approximate flow rates of each one).

a.	El Falucho (main)	800 l/sec.
b.	Playa Portales	45 l/sec.
c.	Playa Placeres	62 l/sec.
d.	Ravine La Tortuga	12 l/sec.
e.	Ravine Los Lucumos	30 l/sec.

The last two ravines are located on the south side of the Cerro Playa Ancha. The main discharge point will soon be eliminated by the new tunnel planned whose discharge point will probably be situated more to the south and will cause no sanitation problems.

The discharges from the sewer system to the ocean at Placeres and Portales are presently located in densely populated zones in the vicinity of bathing beaches. The bacteriological analysis carried out in 1969 during a period of six months (our analysis was carried out by the EMD in collaboration with the Laboratory of the National Health Service, Valparaiso). This analysis revealed that, in the beaches close to these discharges, there was contamination of the sea water and that an attempt should be made to eliminate it.

There is a collector project stretching from Recreo down the coast to Valparaiso where it will pass through the Calle Brasil to come out at the lifting plant. This collector joined as interceptor the southern part of Vina del Mar with Valparaiso collecting all the waters of this vast sector and thus removing on a final basis the problems mentioned above.

2.2 IN VINA DEL MAR

There are two main discharge points to the sea with direct emptying without treatment. The location of the discharge points are as follows:

a. Discharge 19 Norte 350 l/sec.

b. Discharge Recreo 50 l/sec.

The main discharge point is presently in very poor condition considering that the pipelines are eroded and thus causing great contamination in the neighboring beaches. /17

There is presently planned the sewage network for the Renaca beach resort and the collector Renaca-Salinas which will discharge into the drain of 19 Norte.

ATMOSPHERIC CONTAMINATION

The problem of atmospheric contamination in Region V derives from:

1. Industries emitting vapors and gases which are harmful and/or poisonous.
2. Industrial boilers.
3. Incinerators.
4. Heating boilers.
5. Passenger and cargo vehicles.
6. Fumigation chambers for fruits and grains.
7. Ships in the bay.
8. Others (fires, garbage dumps, stoves, etc.).

1. Industries emitting vapors and gases which are harmful and/or poisonous.

This is difficult to solve owing to the large size of the industries and the high cost of installations which require careful design, strict sampling and enough time so that they can be able to adequately control the contaminants produced.

The National Health Service has made periodic samples with a methodical long-term sampling in order to make industry aware of the responsibility which it has towards the community.

There are medium-term projects carried out by some industries for setting up installations.

2. Industrial boilers.

The contamination arises mainly from insufficient combustion both from solid as well as liquid fuel.

Our section is monitoring 216 boilers:

156	boilers with daily consumption of	283,021 kg oil
40		551,502 kg coal
8		3,180 kg paraffin
7		9,040 kg firewood
8	hot gases	
2	electrical	
216*		846,743 kg

3. Incinerators.

The contamination arises basically owing to poor design, insufficient maintenance of the incinerator and careless handling by the operator producing annoyances from smoke and bad odors owing to not taking the operating temperature into consideration.

It is required that builders of incinerators comply with technical standards and prohibit their installation with a common duct for waste and fumes. The stack should have an adequate height taking into consideration surrounding buildings in order not to cause them annoyance.

The garbage should be burned in the afternoon when the atmospheric conditions are more favorable.

Region V has inspected:

452 incinerators burning daily 50,893 kg of garbage.

4. Heating boilers. /18

Their contamination is slight owing to the fuel used, automatic controls and low pressure operation.

*Translator's Note: Figures given as in original text.

There have been inspected:

40 boilers with daily consumption of 13,200 kg of liquid fuels.

The boiler operators, just like the incinerator operators, should have a certificate of competency issued by the National Health Service following successful examination.

There are 495 persons registered.

5. Passenger and cargo vehicles.

The climatic conditions of the area, owing to the sea and to the number of vehicles, is favorable for the environment allowing a rapid dissemination of gases coming from gasoline and diesel engines.

6. Fumigation chambers for fruits and grains.

Given the risk that the high toxicity of the fumigant implies, in the installation of the chambers, strict compliance with safety standards is required.

The fumigating chambers located in the urban area should be shifted to a suitable area and comply with technical standards for their construction and operation.

7. Ships in the bay.

No study has been carried out since emanations of this type are intermittent.

Onboard, the stoker must control firing and the sea winds assist in dilution of fumes.

MEDICALLY IMPORTANT FAUNA

There are in Chile diseases which can be transmitted to man by: consumption or handling of meats and its byproducts, contacts with domestic animals, contamination of food products by animals, or by stings of insects.

Nevertheless, it should be pointed out that, in general, the effect on man of these diseases is small and under normal conditions there is no considerable epidemiological risk.

1. DISEASES TRANSMITTABLE BY MEAT CONSUMPTION

1.1 ANTHRAX. CAUSAL AGENT: BACILLUS ANTHRACIS

Reservoir: Cattle, goats, horses and pigs. Source of infection may be found in the tissues of animals which have died from the disease as well as in the skin, wool and hides contaminated by infected animals.

Preventive measures:

A. Annual vaccination of animals in zootic areas.

B. Examination by a veterinary of slaughter animals which is especially important in the 12 hours penned up prior to slaughter and postmortem.

C. Animals which have died from anthrax are to be carefully cremated at the spot where they died.

1.2 BRUCELLOSIS. CAUSAL AGENT: BRUCELLA MELITENSIS, B. ABORTUS

Reservoir: Pigs, sheep and horses. Source of infection: tissues, blood, urine, milk and especially aborted placentas and fetuses from infected animals.

Preventive measures:

A. Search for infection in cattle by means of the seroagglutination test and removal of infected animals by segregation.

B. Vaccination of calves in enzootic areas.

C. Pasteurization of milk and milk byproducts or its boiling.

D. Removal of fetuses and aborted products. Disinfection of contaminated areas.

1.3 TRICHINOSIS. CAUSAL AGENT: LARVA OF TRICHINELLA SPIRALIS

Reservoir: Pigs and rats. Source of infection: meat of infected animals and its byproducts.

Control measures:

A. Trichinoscopic examination of pigs in slaughterhouses.

B. Prohibition of breeding and feeding of pigs with untreated garbage.

C. Education of the public in order to discourage buying or preparing products derived from pigs which have been illegally slaughtered.

1.4 TUBERCULOSIS. CAUSAL AGENT: MYCOBACTERIUM TUBERCULOSIS

Reservoir: Man, cattle and post-adult fowl. Source of infection: secretions from the respiratory apparatus and milk.

Preventive measures:

A. Examination for tuberculosis in cattle by the tuberculin test and slaughter of animals with positive reactions.

B. Pasteurization of milk and byproducts or its boiling.

1.5 CYSTICERCOSIS. CAUSAL AGENT: TAENIA SAGINATA AND TAENIA SOLIUM

Reservoir: Human beings discharging eggs from parasites together with feces. Source of infection: meat from infected cattle or pigs.

Control measures:

A. Examination by veterinary in slaughterhouses.

B. Cremation of infected animals.

C. Prevent access of animals to latrines or human feces.

2. DISEASES TRANSMITTED BY CONTACT WITH DOMESTIC ANIMALS

2.1 HYDATIDOSIS. CAUSAL AGENT: LARVA OF ECHINOCOCCUS GRANULOSUS

Reservoir: Carnivores infected with adult parasite, especiallydogs. The larval state is encountered in herbivores and in man. Source of infection: feces of infected animals.

Control measures:

A. Strict veterinary control of slaughter of herbivorous animals and destruction of infected visceras.

B. Prohibit feeding of dogs with infected viscera.

C. Antiparasitic treatment of infected dogs.

2.2 TINEA. CAUSAL AGENT: SPECIES OF MICROSPORUM AND TRICHOPHYTON

Reservoir: Infected man and animals such as dogs, cats and cattle. Source of infection: toilet seats, furniture or direct contact with infected animals.

Control measures:

A. Hygiene and popular education of the people in sanitation.

B. Treatment of infected animals and persons.

2.3 RABIES. CAUSAL AGENT: VIRUS RABIDUS

Reservoir: Dogs, cattle, domestic and wild animals in general. Source of infection: saliva of infected animals.

Preventive measures:

A. Systematic annual vaccination of dogs.

B. Elimination of stray dogs.

2.4 TETANUS. CAUSAL AGENT: CLOSTRIDIUM TETANI /20

Reservoir: Intestinal tract of animals, especially horses. Source of infection: soil, dust and especially human and animal feces.

Preventive measures:

A. Cremation of animals which have died from tetanus.

B. Protection of human beings with a tetanus toxoid.

D. Sanitary briefing with respect to danger entailing.

3. CONTACT OF ANIMALS WITH FOOD PRODUCTS

3.1 LEPTOSPIROSIS. CAUSAL AGENT: LEPTOSPIRA ICTEROHAEMORRHAGIAE

3.2 DISTOMIASIS. CAUSAL AGENT: FASCIOLA HEPATICA

This is only mentioned since there are just a few sporadic cases.

3.3 INSECTS

These include flies and mosquitoes which are vectors of a great number of diseases since they transport infectious germs which contaminate foodstuffs.

4. TRANSMISSION BY INSECT BITES

4.1 CHAGAS' DISEASE. CAUSAL AGENT: TRYPANOSOMA CRUZI

Reservoir: Biting reduviid bugs which preferentially inhabit housing structures and inoculate the cruzi by biting.

Preventive measures:

A. Disinfection of homes in areas affected.

With reference to the woodland "habitat", there are no dangerous or poisonous animals species for man or other animals.

In the cities -- and with special emphasis for circumstances arising in disasters -- three elements of relative importance could be pointed out:

a. Rodents. Their presence could become obvious upon collapse of buildings or in areas where demolition is being carried out owing to loss of their natural lairs.

b. Flies. The lack of garbage removal service and the accumulation of wastes would be determinant for their increase.

c. Stray dogs. The scarceness of foodstuffs and lack of their control increases their occurrence on the streets.

These three factors -- even under normal conditions representing essential public health factors -- in periods of disaster become overriding problems causing efforts to be redoubled for their elimination so as to reduce the epidemiological risk.

MEDICALLY IMPORTANT FLORA

Practically nonexistent.

CONTROL OF SANITARY VECTORS /21

1. GENERAL CONDITIONS

The conditions which occur immediately after a disaster encourage a rapid increase in the population of insects, rodents and stray dogs. The most direct cause can be the delay in pickup and removal of garbage and subsequent production of adequate sites suitable for harboring and propagation of these animals. The quartering of great numbers of persons in temporary shelters under these conditions will expose them to diseases transmitted by insects and rodents.

The opportunities and resources for practicing personal cleanliness can be extremely limited in temporary shelters. Persons who are carriers of infectious diseases and who also may be infested by parasites can come into close contact with persons having no infections. This situation, already probably complicated by inadequate sanitary services and installations creates potential risks which should be anticipated and corrected.

The shift of persons to a new place usually exposes them to parasites and epidemic contagious diseases or to those transmitted mechanically by vectors such as flies, fleas, bedbugs, mites, mosquitoes, ticks and rodents. These are vectors of diseases which can develop swiftly in an irregular environment.

2. ANTIVECTOR CONTROL PROGRAM

This should be planned such that two distinct situations are confronted:

a. Emergency phase immediately following the disaster oriented toward the destruction by means of chemical and physical processes of parasites infecting persons, their clothing, bedclothes and other objects and including domestic animals.

From the start, there should be available an emergency sanitation group for carrying out this disinfestation.

b. Phase following the emergency situation in which the activities should be oriented toward an adequate hygiene with respect to foodstuffs, a proper removal of wastes, above all with respect to waste waters and general and personal cleanliness.

During all of the period following the disaster, there should be carried out a direct attack on insects, their breeding grounds and shelters.

Maximum attention should be paid cleanliness of the victims and their belongings in order to reduce the incipient dangers of infestation, infection, dermatitis and other personal afflictions.

It is advisable to carry out preliminary research in the areas and encampments in order to determine the quantity and extension of sites where insects and rodents can live and multiply. These sites should be indicated on maps in order to show the places where control measures are required.

3. MATERIAL NEEDS: ACCESSORIES

Considering that it is absolutely necessary to keep a stock of equipments and materials in order to cope with an emergency situation, the following is required:

Sprayers, manual friction	40
Atomizers, manual friction	40
Spare parts	Various
Dipterex 80%	500 kg
Baytex 50%	200 kg
Baytex 40%	500 kg
DDVP 100%	500 kg
Warfarin 0.5%	200 kg
Traps for rodents	50 units
Metal antifly screens	5 rolls
Garbage cans, 50 liters	300 units

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FUNERAL SERVICES AND BURYING THE DEAD

It is necessary to supervise funeral services in times of disaster. In addition to a medical examination of the deceased persons, a sanitary inspection is required especially during outbreaks of epidemics.

The work which should be performed consists in:

a. Transfer. The movement of dead bodies in order to remove them from the disaster site is not under the responsibility of sanitation personnel. It is important for maintaining morale that dead bodies be quickly and discreetly removed from the sight of the public.

b. Storage of dead bodies. There should be four sections, i.e., one receiving room, one viewing room, one storage room for dead bodies which are not advisable to show and one room which can be used for records and for keeping personal effects. In some serious emergencies, it may be necessary to forbid storage of dead bodies.

c. Legal proof of death. It is the responsibility of the medical examiner to fill out the death certificate.

d. Identification of dead bodies. Everything possible should be done to identify the dead bodies or at least for obtaining the maximum information.

e. Preparation of an official death record. The dead body should have attached an identity marker and all information which can be acquired should be recorded in a special book.

f. Final removal of the dead body. Collective burials in a common trench should be avoided. The location of burial sites should be marked on maps with numbered series for identification.

g. Return of valuable personal effects. The close relatives should the valuable personal effects of the deceased. In the case of an epidemic, the personal effects should be disinfected before being returned.

The following articles are required for the funeral service: stretchers, leather gloves, rubber gloves, smocks, boots, caps, disinfecting soap, cotton gauze, pick axes and shovels. Heavy machinery will also be needed to move the earth in addition to trucks.

Precautions should always be used when handling dead bodies especially in case of death owing to contagious diseases. During epidemics, a strict sanitary supervision should be maintained during all phases of handling the dead bodies. The respective personnel should have special work clothes and, at the end of a work day, should carefully wash off with a disinfecting soap.

HYGIENIC EDUCATION OF DISASTER VICTIMS

Experience has shown that the sanitary installations set up as part of the rescue work after disasters do not always carry out their task because they are used either improperly or insufficiently. Among the most important causes of this improper attitude on the part of victims are found the following:

a. The psychological effect of the disaster mainly shown by an apathetic attitude, /23

b. The low standard of living of the victims before the disaster, and

c. Their ignorance of how to use and maintain the installations supplied.

Therefore, the provision of sanitary installations is not sufficient in itself to solve the problem. The people should use them properly and frequently such that an adequate level of personal cleanliness and environmental hygiene is achieved.

Consequently, all hygienic personnel involved have the duty of actively participating in teaching persons affected by the disaster how to properly use the sanitary installations, to maintain the standards of personal hygiene and to safeguard the health of the community.

It is necessary to illustrate a number of points related to the problem of education:

In order for the teaching to be profitable, the confidence and collaboration of the public should be maintained. In order to gain the confidence of the public, it is important for the teacher to use a helpful attitude.

The sanitary installations used should be of a type easily understandable by the public. It is necessary to look for simple and accessible solutions without sacrificing basic principles of hygiene.

When it is not possible to avoid a complicated installation, it will be necessary to instruct patients and public continuously in order to have them understand how to make a proper use of it.

The direct and objective teaching is the most effective.

In emergency and short duration situations, there is not enough time to start educational processes and the proper functioning of the sanitary installations is a function of an effective inspection. In order to assist the professional inspectors, it is necessary to use young people in the area affected and personnel of assistance organizations such as the National Red Cross. Systematic and periodic inspections should be carried out.

In emergency situations, the utility of broadcasting equipment for large-scale education has been proven.

Teaching on matters of sanitation is necessary especially in the following aspects:

1. To avoid use of contaminated or suspect water.
2. To avoid wasting water.
3. To collaborate in distribution of water.
4. To collaborate in protecting the water supply system.
5. To collaborate in the proper use of fecal removal installations and preserving their cleanliness.
6. To avoid scattering wastes and properly observe rules for collecting them.
7. To collaborate in reducing insect populations.
8. To keep shelters and encampments clean.
9. To keep clean containers for foodstuffs, plates and utensils. /24
10. To observe the rules for personal hygiene (body and clothing).

11. To collect manure in proper manner.

12. To participate in community cleanup efforts.

Naturally, in order to maintain the interest of the population in all previously mentioned aspects, it is of the greatest importance to illustrate them with leaflets and instructional material.

EPIDEMIOLOGICAL CONSIDERATIONS RELATING TO DISASTERS

From the general viewpoint in cases of disasters, special importance is held by the consequences derived from unfavorable environmental conditions created by the emergency and which can encourage appearance of epidemics especially through the digestive tract. This would concern typhoid and paratyphoid fever, infectious hepatitis and enteric infections with various etiologies.

As environmental factors encouraging appearance of these diseases, we should consider the use of contaminated drinking water or contaminated foodstuffs and the large-scale degradation which is caused in excreta removal systems and other systems for removing residues and wastes.

On the other hand, taking into consideration that in Chile these diseases have characteristics of endemic illnesses, no matter what situation such as would arise from a disaster would produce conditions suitable for transforming an endemic disease into an epidemic situation.

When the disaster occurs during winter periods and large groups of the population are exposed to cold, either because being at the mercy of the elements or owing to lack of homes or lacking heating in others, the population is exposed to a considerable increase in mortality owing to acute diseases of the respiratory tracts. In this way, the risk of becoming ill with a common cold, acute bronchial infections, pneumonias or bronchopneumonias is considerably increased. Add to this the possibility of being in an epidemic period of the flu and the situation would then acquire an extremely serious character. The influenza (or grippe) assumes in these circumstances an extraordinary seriousness causing, as epidemiological data accumulated for centuries does point out, high losses both in the civilian population as well as among the field forces where at times more casualties are caused than those produced by warlike actions per se.

We should take into account also, in cases of disasters, the fact that the population will be found deprived or limited in capabilities for maintaining cleanliness of person, clothes and other garments. This can cause the appearance of parasitosis especially involving pediculosis and scabies. In the case of scabies, the fact is important that, if it is not treated, the scabies will turn into impetigo and this conditions the frequent occurrence of acute nephritis as complication. If there are lice, it is necessary to take into consideration the risk which this means if there would appear one single case of typhus exanthematicus. Probably the transmission would be massive and would cause grave consequences.

PUBLIC HEALTH SERVICES

/25

Chile is a unitary State and political power is exercised by a same national authority under a same juridical regime.

Nevertheless, the modernization of the State has required a system allowing a decentralized regional administrative development achieved by maintaining an equilibrium between the exploitation of natural resources, geographic distribution of the population and national security.

In addition, two basic concepts have been incorporated into the regime of internal administration. These concepts involve planning and development for the purpose of establishing an authentic national integration with the effective participation of the population likewise committed to the higher goals of their region.

For this purpose, starting on 1 January 1976, the country was divided into 12 regions and one metropolitan area.

The former provinces of Valparaiso and Aconcagua and the Department of San Antonio presently form Region V whose capital is Valparaiso, the seat, furthermore, of the regional intendant whose duties include formulating and carrying out regional developmental plans of State organizations. Further, the private sector is to be involved in this development and priorities are to be established in programs and specific projects.

Consistent with the arrangements affecting all public services of the country, the National Health Service is in a state of transition from the existing zonal health directorates in the previous sanitary organization to ultimately become health regions being configured into a new technical administrative structure.

The local organizational plan of the National Health Service which is still valid with a few variations is as seen in the enclosed copy.

The future organization in broad outline, consistent with the structure of the interior administration and government of the country creates a Regional Ministerial Secretariat of Health, similar to those set up in each one of the other ministries being integrated into the regional government and whose leadership is exercised by the regional intendant whose mission is to prepare developmental plans, administer regional resources and exercise financial control of the public services.

In a first preliminary plan, the health region would be directed by a regional ministerial secretariat with standardizing functions including supervision, control and advisory capacities represented by two departments: planning and administrative support.

From this secretariat would depend directly the operational health areas, i.e., the executive units responsible for carrying out the health programs involving technically diversified hospital centers.

These operational areas would have to have a large degree of self-sufficiency in order to satisfy the basic health requirements of their

population being connected with centers having greater resources for specialized attentions within a framework of effective coordination.

This plan is undergoing analysis in its gradual application for the purpose of achieving a decentralized organization capable of undertaking and solving regional health problems quickly, expeditiously and on a technically satisfactory basis.

ORGANIZATIONAL PLAN: VALPARAISO HEALTH ZONE IV

ZONAL DIRECTOR

TECHNICAL COMMITTEE

CONSTRUCTION OFFICE

LEGAL OFFICE

CEMETERIES

ZONAL VENEREAL CONTROL CENTER

Ven. House

TECHNICAL FUNCTIONS
Medical Inspectorate

ADMINISTRATIVE FUNCTIONS

PROTECTION, [Illeg.], HEALTH RECOVERY

Supervision of epidemiological programs - sanitary engineering, industrial health, local laboratory elements, preventive medicine, maritime health problems

GENERAL TECHNICAL SERVICES

Consultants: statistics, subsidies, medical professions -- health education

Budget Control Accountability, Property and Investments, Acquisitions

Secretariat for Records and Office of Claims, Personnel and Welfare, Communications

HOSPITAL AREAS

Base Hospital

Base Hospital

Base Hospital

Base Hospital

Surgery

Surgery

Surgery

Surgery

Surgery

Surgery

Surgery

Station

Station

Station

Station

Station

Station

Station

Station

In addition, on the higher government level, the national doctrines and /26
policies are the responsibility of the Ministry of Health which has stated that the right to health is unique and indivisible being an asset of the community and an inalienable right acquired from the beginning together with basic elements of social harmony and international experience whose responsibility is dedicated in the political constitution of the country.

In this way, the Ministry of Health has the goal of ensuring social welfare, planning health actions on the national level. Further, it encourages and sets up proper coordination within the State services and with the private sector. It issues standards of national application. It provides an accounting service and evaluates the results in order to modify or intensify the corresponding arrangements.

Nevertheless, since problems affecting health have local characteristic aspects, the regions are given the responsibility for adaptation of plans and decisions decreed by the Ministry, applying them in accordance with priorities or specific existing problems carrying out in this way an effective regionalization.

HEALTH PROGRAMS

The customary health programs which are performed by areas or regions of the country are divided into two large groups, one concerning persons and another oriented towards the environment.

The first group involves:

Gynecological-obstetrical program with subprogram for the newly born

Program for children and adolescents

Program for adults and elderly

Program of odontology

Program for supplementary nourishment.

The proposals of the overall program for women involve reducing the mortality rate of the newly born as well as mothers owing to obstetro-gynecological reasons. The most effective resources are concentrated on teh most vulnerable groups leading to early attention given the pregnant, puerperal and recently born by using inspections, visits to homes, hospitalization and education.

The Association for Protection of the Family actively participates in this program and provides assistance in family planning for the beneficiaries of the National Health Service, further providing educational and orientational guidance in addition to durable consumer goods and supplementary remunerations.

In the program for children and adolescents, the goals have been concentrated toward reduction of the different intantile mortality rates up

to 15 years of age, reducing malnutrition of children less than six years of age, reducing the pathology rates by vaccination, eradication of smallpox, substantial reduction in mortality owing to diarrhea and acute respiratory diseases.

The essential goals of the adult health program are to encourage actions leading to protection, recovery and rehabilitation of health for those persons 15 years of age and older in order to maintain their health and to decrease the morbidity/mortality rates excluding the gyneco-obstetrical problems of women.

Within this framework are included, likewise, as subprograms those related to old age, control of tuberculosis and control of venereal diseases with special plans especially focused on the epidemiological aspect.

Plans in the odontological program call for encouraging extension of /27
potable water fluoridization systems and other elements. Education for encouragement of oral health will be provided all of the population especially in school groups. There will be encouragement of rehabilitative odontology on an overall nonmutilating basis. There will be an increase in coverage of medical attention in urban and rural areas with emphasis on children. There will be an increase in dental attention given the adult population and preferentially to pregnant women.

The proposals for the supplemental food program essentially refer to improving the nutritional state of the population especially in the more vulnerable groups which include children less than six years of age, pregnant women and wet nurses. The proposals contribute to stimulating normal development in the first years of life. Infantile malnutrition will be prevented. The health nutritional level of the population will be raised.

This will mainly concern distribution of powdered milk and protein foods to children less than six years of age, pregnant women and wet nurses.

This organized delivery dates from 1954 with variations in programming economic and budgetary resources as well as availabilities of milk whether national or imported. There has been established since 1974 the distribution of milk with 26% fat to nursing mothers and wet nurses delivering 25,561,037 kgs that year and delivering from 1975 on to school systems protein mixtures with wheat flour and soy bean base, semiskim milk, minerals and vitamins.

The programs oriented towards persons are:

Environmental hygiene

Foodstuff control

Zoonosis

Industrial hygiene and safety

Occupational health.

These programs have as a common denominator the effort to avoid, decrease, prevent and control risks above all those toxic and microbic ones derived from community living.

There are proposals to encourage systems for supplying potable water and increasing the coverage of sanitation systems for the removal of excreta in the rural environment; increase in potable water and sewage systems for marginal populations; expansion of actions for control of atmospheric contamination; increase in protective measures with respect to occupational hazards; reduction of diseases and economic losses derived from biological, physical and chemical contamination of foodstuffs; integral quality control of national and imported medicines; reduction of morbidity/mortality caused by improper use of pesticides.

The program of epidemiology of transmittable diseases and health education supplement all previous ones seeking to ensure positive individual and collective prevention means.

International assistance for health activities flows and is channeled through governmental agreements with international agencies such as the World Health Organization, Inter-American Development Bank, International Federation for Family Planning, congregations, churches, etc., and its quantity is controlled by specific projects properly evaluated as a function of proposed goals.

PUBLIC HEALTH LAWS /28

Chilean legislation in this direction is quite comprehensive and pioneering in matters referring to social forecasting, preventive medicine, safety and social assistance, health systems of collective groups. The concepts and principles relating to the right to health of the individual and obligations of the State are incorporated in the political constitution of the country.

Furthermore, the governments have systematically included in their health policy declarations of international principles and have signed treaties bearing witness to a high degree of concern for the health of the population.

We shall point out the most important legal provisions most directly related to public health. Many of these are being periodically revised and modified in order to achieve better levels of improvement in their provisions.

Political Constitution of the Republic of Chile
1933 Articles

Ministry of Public Health
DFL No. 25 of October 1959

Sanitary Code
Decree 725/67 of January 1968

National Health Service
L. 10.383 of August 1952

Regulation of Local Health Organizations
Internal D. of January 1961

Regulation of Personnel of the National Health Service
Decree 10.998 of June 1961

Statute for Professional Functionaries, Doctors, Pharmacists and Dentists
L. 15076 of December 1962

Regulation of Law 15.076
Supreme Decree 110 of June 1963

Regulation Concerning General Area Practitioners
Decree 9726 of June 1962

Law Concerning Protection of Minors
L. 14907 of September 1962

Offenses of Vagrancy and Mendicancy
L. 11625 of October 1954

Crimes and Simple Offenses against Public Health
Penal Code Articles 313 to 319

Regulation of Pharmacies, Druggists and Similar Establishments
Supreme Decree of January 1935

Regulation for Pharmaceutical Specialties /29
Decree 547 of June 1941

Regulation of Narcotics
Supreme Decree of March 1960

Regulation for Control of Biological and Biochemical Products
Decree 788 of November 1941; Decree 139 of February 1942; Decree 889 of June 1944; Decree 1040 of August 1945; Decree 1202 of June 1946; Decree 712 of April 1947; Decree 880 of May 1947; Decree 1279 of September 1947; Decree 1438 of October 1948; Decree 1928 of November 1950; Decree 1540 of September 1953

Sanitary Regulation for the Chemical-Pharmaceutical Industry
Decree 179 of March 1959

Regulation for Control of Drugs and Prepared Hypnotic Medicines, Barbiturates and Similar Preparations and Stimulants for the Central Nervous System (Amphetamines and such like)
Supreme Decree 189 of November 1963

Regulation for Industrial Hygiene and Safety
Supreme Decree 190 of November 1963

Regulation Establishing Standards for Avoiding Gases, Vapors, Dust, Emanations and Environmental Contaminations of any Kind
Decree 144 of May 1961

Regulation of Industrial Health
Supreme Decree 2169 of September 1952

Regulation on Maximum Concentrations of Poisonous Substances in Enclosed Spaces in Which Work is Carried out by Humans
Supreme Decree 1106 of November 1954

Regulation on Minimum Sanitary Conditions in Industry
Decree 762 of September 1959

Regulation of Steam Boilers and Generators
Decree 190 of October 1963

Regulation of Industrial Hygiene for Bread Manufacturer
Decree 739 of December 1937

Regulation on Occupational Diseases
Supreme Decree 435 of June 1958

General Regulation for Foodstuffs
Supreme Decree 377 of August 1960

Law on Illicit Slaughtering
L. 11564 of July 1964

Pasteurized Milk
L. 4864 of August 1930

Regulation on Pasteurized Milk
Supreme Decree 745 of July 1933; Decree 2803 of October 1934; Decree 310 of May 1939; Decree 1218 of October 1942; Decree 4261 of August 1948; Decree 1417 of July 1951

Regulation on Reporting Transmittable Diseases /30
Supreme Decree 357 of May 1932; Decree 552 of March 1947; Decree 233 of January 1951

Regulation of Prophylaxis of Rabies in Man and Animals
Decree 231 of February 1955

Regu' tion of Prophylaxis for Venereal Diseases
Dec 2 891 of October 1955

Regulation on Maritime, Air, Health, and That of the Country's Borders
Decree 132 of February 1941; Decree 735 of April 1948; Decree 42 of January 1960

Regulation on Encampments
Decree 738 of December 1961

General Regulation on Special Sewer Systems
Decree 236 of April 1926

Potable Water in Centers of Population with More than 1000 Inhabitants
L. 6986 of July 1941

Regulation on Cleanliness of Housing
Decree 137 of March 1925

Minimum Municipal Sanitary Standards
Decree 4740 of October 1947

General Regulation for Cemeteries
Supreme Decree 421 of April 1932; Decree 77 of March 1933; Decree 385 of July 1937

International Sanitary Regulation approved by the Fourth World Health Assembly (May 1951), modified in 1955-56

SOCIAL SERVICES

The Chilean State is characterized by an old and lasting concern for the wellbeing and social security of its inhabitants which have placed it in a position of leadership among nearby countries and its social legislation may be termed among the most advanced in the world.

More than 50 years ago, the laws for obligatory insurance, security for State employees, security for private employees, industrial accidents, professional diseases, etc. were followed by many other laws whose goal was to protect employees and workers while at work and at home so as to ensure medical and economic resources for coping with situations involving risks or unfavorable contingencies.

All of this legislation has been in a continual process of revisions and improvement in order to incorporate new concepts, expand its field of application or to extend initially established benefits.

The most outstanding legislation in this aspect was represented by so-called Law 4054 promulated in 1924, revised and modified in 1952, now termed the Law of Social Security and National Health Service whose most relevant characteristics follow.

It states that there is an obligation for maintaining security against risks of sickness, disablement, old age and death for all workers who earn a salary, candidate workers and apprentices, independent workers having multiple activities with an income less than a living wage with its benefits even being extended to the family of the insured ones.

Employers and workers participate in the monthly contributions with a /31
strong and majority participation of the latter, acquiring in this way rights to monetary loans and benefits in relation to the sum and frequency of contributions.

The loans which cover the risk of ill health refer to the right to:

a. Systematic and compulsory health examination, in accordance with L. 6174 tending to discover initial states of chronic diseases in apparently healthy individuals.

b. Medical and surgical assistance whether in outpatient clinics, home and hospitalizations.

c. Dental attention.

This benefit is given the contributor and his immediate family members in such a way that both receive proper care and this includes those persons pregnant, those having just delivered and puerperal. It is also given to children whether they are legitimate, natural, illegitimate or adoptive including those less than 15 years of age. These are all given preventive and curative attention including hospitalization as well as the therapeutic and additional nourishment required. The contributor who cannot work receives a subsidy for ill health which is computed according to the amount of his contributions of the last six months up to a period of 52 weeks plus 26 additional ones which can be extended even if the disease is recoverable.

The loans for periods of maternity refer to the payment of a similar subsidy on a prior basis by the insured persons for six months before and six months after birth, capable of being extended for six months more.

The pregnant women receive, furthermore, supplementary foodstuffs or, on occasions, assistance for nursing equivalent to 25% of the previous sum.

The loans which cover the risk of disablement are given to the insured person who remains incapacitated for earning his living by his work in accordance with his energies, capability and training. This remuneration is at least equivalent to 30% of what a worker earns in a similar work situation.

The case of absolute disablement being relative when the incapacitation referred to infections of the nervous, circulatory, bronchopulmonary, myoosteoarticular systems and organs of the senses allow the worker to obtain between 30 and 60% of his customary salary.

The monthly pension for absolute disablement corresponds to 50% of the basic salary which can reach as high as 70% being increased in percentages depending on children less than 15 years of age or adult students likewise keeping the right to family assignment.

The monthly pension for relative disablement is equal to half of the previous one.

Retirement in recognition of age is given those who have arrived at 65 years of age and have at least 800 weeks of contributions for men and 500 weeks for women.

The amount of these old age pensions is computed in the same way as the pensions for absolute disablement with the family assignments likewise being maintained.

The risk of death is covered by granting the family who must take care of the funeral expenses a sum equivalent to the annual salary when alive. In addition, the widow has the right to a pension equal to 50% of what the party concerned earned during one year but is transformed into a lifetime annuity provided the widow is more than 65 years old and was disabled at the time of death of the insured person.

The pensions for orphans are granted to children who are legitimate, natural, illegitimate and adoptive, children less than 15 years old, students /32

up to the age of 18 or who are disabled, from a deceased insured person to the amount of 20% of the average salary of pensions, being granted to the surviving spouse or to persons or institutions having them in their care.

This has briefly outlined one of the largest social security plans of the country. Concerning similar programs, additionally adapted to various groups of workers, there have been structured other systems covering essential risks in the life of their participants. This has led to the creation and development of the Funds for social security involving such organizations as national defense, merchant marine, municipal, bank and railroad employees, etc.

This great variation of availability has generated multiple systems with differing obligations, dissimilar benefits and has caused the government to pass legislation establishing one single social security statute covering in inequitable and egalitarian form the risks of their participants without any loss in prerogatives and benefits acquired. This statute is now in an advanced stage of analysis and revision for its early promulgation.

One considerable social gain has been the equalization of the amount of family allotments for all workers in the country regardless of their social security or official status.

EMERGENCY MEDICAL SERVICES

The Public Assistance of Santiago is the only establishment differentiated from the National Health Service exclusively dedicated to emergency care and which was originally created in order to take care of persons involved in highway accidents. It has now gone beyond its working scope and provides subsequent care including all specialties having been transformed into a model establishment for this type of care.

The further emergency services are performed by the hospitals since they form important clinics depending on their category.

It should be noted that, depending on the internal regulations of the National Health Service and in all establishments of the country, emergency care should be granted with its degree of care being differentiated consistent with its resources and terms and quality of organized medical work.

For this purpose, there have been created four emergency care systems which have the following characteristics:

System 1. There is one special service intended for emergency care. Using continuous shifts, it covers 24 hours every day of the year. The medical shifts are four hours long and there can be some two hours long in order to reinforce care at night, Sundays and holidays.

System 2. There is not one special emergency service. Any doctor in the establishment can be assigned for two of the hours for which he is contracted including a possible increase in time in order that an emergency outside of customary hours can be anticipated and including stay in the

establishment. Within the customary hours, the emergency can be absorbed by the outpatient clinic.

System 3. All contracted hours are performed during customary hours for purposes of the responsibility or contract. When needed, the presence of a doctor in the establishment outside of these hours or at night or on Sundays or holidays, the doctor will be called and the extraordinary hours will be cancelled on a monthly basis corresponding to the actual time worked.

System 4. This refers to the manner of caring for an internal emergency and this can be with any one of the three previous systems paying in this case a premium of 30% of the hour value assessable instead of the 50% of the previous cases. /33

In Region V, the various establishments have the systems as indicated in accordance with a resolution of the General Directorate:

Hospital		Hospital	
Van Buren	1	Calera	2
Deformes (Pediatrics and Obstetrics)	1	Ligua	3
		Cabildo	3
Vina del Mar	1	Petorca	3
Quilpue	1	San Felipe	2
Quillota	1	Los Andes	2
Casablanca	3	Putaendo	3
Valparaiso	4	Llay Llay	3
Salvador	4	San Antonio	2
Penablanca	4		

The terms and conditions of an emergency service differentiated and organized with its own equipment is installed in the four base hospitals of the old Health Zone IV.

Within the obligations corresponding to the emergency services, it is advisable to point out:

The overall and immediate care of sick people and accident victims arriving whose care cannot be postponed.

The reception and beginning of treatment of those needing hospitalization as well as the technical supervision of the hospitalized persons especially in cases of accidental or unforeseen complications.

The overall supervision of the administrative technical operation of the hospital outside of customary hours of care.

Coordinating with other establishments in the care of wounded or accident victims depending on requirements and circumstances.

Transportation of sick persons in ambulances from the public highway or private homes to outpatient clinics and hospitals.

Furthermore, just as important as the above:

The initial organization of emergency resources in order to cope with community accidents or disasters.

It should be pointed out that experience gathered shows that, when confronted with disasters which have taken place, there may be seen a high feeling of citizen cooperation assisting in work and reinforcing the work shifts of those personnel of the various tables of organizations including doctors, nurses, matrons, nurses aides and service personnel taking spontaneous advantage of their functional and common duties even to the point of relinquishing their family problems.

In the National Emergency Plan, it is set up that the Ministry of Health in coordination with the emergency office of the Ministry of the Interior:

Will work out appropriate planning consistent with national and regional plans.

Will enable utilization of hospitals, clinics, infirmaries, etc. as well as resources for evacuation and other purposes.

Initiate action for preventing epidemics and carry out assigned sanitary tasks in agreement with the chief of the disaster area and consistent with own initiatives during the first instance.

Establish coordination with the Red Cross and similar institutions informing the area disaster command. /34

Will subordinate local or regional resources to the chief of the disaster zone granting all assistance required.

MEDICAL SERVICES

Use and Efficiency of Beds — Year 1975

Establishments and Services	Allowance of beds 31-12-75	Avg No. of Beds	Occupation Ratio	Average Days Stay
Salvador Hospital	228	219	87.8	52.9
Serv.: Medicine	19	11	68.0	17.6
Psychiatry	209	208	89.1	54.9
Van Buren Hospital	682	594	81.7	12.3
Serv.: Medicine	114	87	95.3	19.5
Surgery	108	84	79.9	9.7
Urology	72	67	81.6	17.8
Traumatology	72	70	89.0	27.7
Cancerology	50	44	80.9	16.6
Neurosurgery	26	22	95.1	18.5
Dermatology	35	27	78.1	23.5
Ophthalmology	44	42	72.5	11.2
Otorrhinolaryngology	44	44	73.6	5.7
Emergency	31	31	77.2	2.3
Inpatients, Specialties	16	12	59.8	3.4
Inpatients, General	16	14	62.5	8.1
Van Buren Pediatric Clinic	54	50	70.5	17.5
Deformes Hospital	446	409	79.2	7.2
Serv.: Medicine	51	47	94.5	13.9
Surgery	44	39	73.8	9.1
Obstetrics	115	105	84.1	3.4
Surgical-Medical Unit	29	28	84.6	12.8
Gynecology	28	21	78.8	9.6
Pediatrics	179	169	72.3	10.5
Medicine	67	65	78.0	12.7
Surgery	33	31	78.6	13.2
Orth. and Traumatology	20	18	73.2	14.6
Obstet. Unit, Newborn Infants	34	32	63.6	11.4
Infections	15	13	62.7	14.7
Post-Infantile Clinic	10	10	55.3	2.1
Valparaiso Hospital	211	211	76.1	23.9
Serv.: Surgery	96	96	64.7	16.4
Phthisiology	79	79	90.5	41.2
Rehabilitation	25	25	80.3	49.8
Inpatient	11	11	63.0	11.6
Hospital for Traumatology	51	51	83.8	27.0
Casablanca Hospital	29	29	36.7	6.8
Vina del Mar Hospital	445	102	86.4	8.4
Serv.: Medicine	76	65	93.6	17.7
Surgery	76	74	89.8	13.9
Obstetrics	75	70	90.1	4.0
Gynecology	11	11	89.1	6.4
Coronary Unit	4	4	73.0	6.5
Emergency	48	47	84.6	5.3
General Inpatient	11	11	80.2	8.1
Pediatrics	144	130	79.9	9.5

Establishments and Services	Allowance of Beds 31-12-75	Avg No. of Beds	Occupation Ratio	Average Days Stay
Medicine	55	44	88.5	12.4
Surgery	24	24	77.6	8.5
Premature Births	18	15	84.3	27.4
Unit for Premature Births	16	16	64.7	8.3
Infections	15	15	64.2	9.7
Post-Infantile	16	6	94.9	2.3
Quintero Hospital	56	56	36.0	6.0
Serv.: Medicine	10	11	82.7	8.4
Surgery	10	9	14.6	10.0
Obstetrics	15	15	36.3	3.6
Pediatrics	20	20	21.6	7.1
Inpatient	1	1	3.6	2.6
Quilpue Hospital	141	130	73.2	6.1
Serv.: Medicine	16	16	87.1	12.9
Surgery	16	9	64.5	9.3
Obstetrics	47	47	66.9	3.7
Pediatrics	49	45	74.6	11.3
Inpatient	6	6	64.3	5.4
Emergency	7	7	92.3	4.0
Penablanca Sanitorium	257	257	78.3	150.0
Serv.: Phthisiology	257	257	78.3	150.0
Limache Hospital	48	67	67.7	6.9
Serv.: Medicine	12	31	69.6	9.8
Obstetrics	18	18	54.0	3.3
Pediatrics	18	18	77.9	9.6
Quillota Hospital	232	214	86.2	7.9
Serv.: Medicine	63	54	80.6	10.9
Surgery	62	54	93.5	13.8
Obstetrics	30	30	86.3	3.5
Pediatrics	53	59	61.9	8.2
Unit for Newborn Infants	7	-	-	-
General Inpatient	13	13	74.9	5.8
Emergency	4	4	44.2	1.5
Calera Hospital	86	85	79.8	4.5
Serv.: Medicine	22	20	88.6	7.1
Surgery	2	4	90.0	5.8
Obstetrics	22	20	92.3	3.0
Unit for Newborn Infants	15	13	68.8	2.9
Pediatrics	25	28	68.4	7.3
Ligua Hospital	76	74	59.2	5.5
Serv.: Medicine	31	29	56.3	6.5
Obstetrics	17	17	65.7	3.3
Pediatrics	25	25	62.7	7.0
Inpatient, General	1	1	40.2	4.7
Inpatient, Obstetrics	2	2	17.9	2.7
Cabildo Hospital	10	10	52.5	3.0

Establishments and Services	Allowance of Beds 31-12-75	Avg No. of Beds	Occupation Ratio	Average Days Stay
Petorca Hospital	38	36	36.0	7.1
Serv.: Medicine	22	21	38.7	9.1
Obstetrics	6	6	29.3	2.1
Pediatrics	8	8	37.7	11.8
Inpatient	2	1	1.3	2.6
Ninos Mena Hospital	35	47	71.4	12.1
Serv.: Medicine	23	31	76.1	18.8
Surgery	12	16	62.8	6.2
Los Andes Hospital	203		54.4	7.7
Serv. Medicine	46		63.8	12.4
Surgery	69		50.0	9.9
Obstetrics	39		49.2	3.8
Pediatrics	38		55.0	11.0
Inpatient	11		56.1	3.9
San Felipe Hospital	211		68.3	6.0
Serv.: Medicine	59		68.3	8.6
Surgery	57		66.1	6.4
Obstetrics	29		65.0	2.5
Pediatrics	42		81.7	6.5
Psychiatry	24		54.3	20.0
Llay-Llay Hospital	76		58.3	4.6
Serv.: Medicine	22		55.7	5.1
Surgery	16		59.3	5.2
Obstetrics	20		65.9	3.6
Pediatrics	18		51.8	5.4
Putaendo Hospital	64		36.2	7.6
Serv.: Medicine	48		38.5	8.5
Obstetrics	6		27.3	2.7
Pediatrics	10		33.0	8.9
Putaendo Sanitorium	604		96.2	1185.0
Serv.: Psychiatry	604		96.2	1185.0
San Antonio Hospital	190			
Serv.: Medicine	40			
Surgery	40			
Obstetrics	47			
Unit for Newborn Infants	8			
Pediatrics	40			
Inpatient	10			
Intensive Care Unit	5			

MEDICAL LABORATORIES

These make up detached services from each hospital being operated as diagnostic institutes and performing examinations both for outpatient consultants as well as for the hospitalized patients.

The work of the most important ones may be expressed in the following table:

1975	Van Buren	Deformes	Valparaiso	Vina del Mar
Number of donors of transfusions	5,403 5,581	2,929 3,550	1,215 1,416	4,034 5,040
Liters of blood transfused	2,830	1,299	587	1,912
Average level				
Stored blood/liters	18	10	8	10
Refrigerators and capacity	1/15" 1/7"	1/12" 1/7"	1/2" 1/9"	1/12" 1/6" 1/8"

Operating with the Central Laboratory of the Van Buren Hospital is a Radioisotope Laboratory with installations and elements financed to a great extent by private funding. /37

Within the "Valparaiso" Hospital are installed the Laboratories of the University of Chile which are devoted for 90% of their activity to teaching and pure research.

The laboratories are subdivided into:

Laboratory of Microbiology

Laboratory of Virology

Laboratory of Parasitology

Laboratory of General Pathology

Laboratory of Physiopathology with Sections for Immunology and Respiratory Units.

It should be pointed out that in the Laboratory of Virology there was successful isolation of Virus Type A/Victoria 75 in the recent influenza epidemic.

BLOOD BANK

Its activity may be seen from the following table:

Hospitals 1975

Type of Examinations	Van Buren	Deformes	Valparaiso	Vina del Mar
Chemical	64,548	63,562	10,383	19,811
Bacteriological	23,343	18,520	3,768	12,806
Hematological	91,841	73,261	12,494	22,045
Others	16,394	52,115	12,787	3,778
Total	196,126	207,458	39,432	58,440

The majority of them are conducted according to guidance from the American Association of Blood Banks.

Succinct anamnesis and questionnaire concerning previous febrile diseases including venereal ones or suspicion of epidemic hepatitis.

The stocks of the Australian antigen was exhausted in coping with this latter diseases.

Weight and arterial pressure.

The great majority of donors are family members or close friends of patients who have had surgical operations.

There are few voluntary donors.

MEDICAL MATERIAL

There are two organizations subordinate to the National Health Service. They have to do with the production, acquisition and distribution of elements for medical use and are:

Central Supply Office
Bacteriological Institute

Plans on the part of the government call for operation as commercial entities, separate from the National Health Service with self-financing and competing on the open market for supplying elements to hospitals of the service.

The national production of medical material is on a small scale and involves some equipment used in surgery or traumatology. It is scarce to such an extent that practically all must be imported using to a large extent credits from France, Germany, Brazil, etc. /38

The Bacteriological Institute prepares vaccines subject to international control which are outstanding in their quality. These include vaccines for smallpox, BCG, rabies, diphtheria, tetanus. Penicillin is also produced in all its range as well as an extensive line of therapeutic sera for human use.

During 1975, production for the National Health Service amounted to:

7,000 flasks of antigens and antisera for diagnostics

37,000 boxes of vaccines (antityphus, triple, DPT and BCG)

57,000 boxes of toxoids (diphtheria, tetanus and antitoxin)

8,000,000 flasks of penicillin sodium

12,000,000 capsules of chloramphenicol

Training has been given to more than 4000 students in laboratory techniques, obstetrics, infirmary practice and medicine. There was carried out several thousand examinations of quality control for pharmaceutical, virological, bacteriological, immunological, bromatological and serological products.

Valparaiso has a branch of the Santiago Supply Center for supplying elements to hospitals of Region V. This branch is in a well-built and spacious building and has a satisfactory assortment of products.

The Chile Laboratory is a commercial enterprise with a solvent economic base. It has extensive and varied production lines for items at relatively low cost. It generally supplies all hospitals of the country above all with products incorporated in the National Formulary.

[Signature]

Dr. Raul Gutierrez Roman
Medical Inspector, Region V

[Seal of National Health Service]

May 1976